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THE REVIEW

DEVOTED TO THE INTERESTS OF THE AMERICAN SOCIETY FOR STEEL TREATING

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1932 METAL CONGRESS, EXPOSITION IN BUFFALO

NEW MUNCIE GROUP CHOOSES OFFICERS

Over 100 Metal Men Present at Organization Meeting

Muncie (Ind.) group is the newest local section of the A. S. S. T. On Jan. 14 an organization meeting of this group was held at the Muncie Products Division of General Motors Corp. at which time 100 men from Muncie, Anderson, and Newcastle announced intentions of forming a group of the Society because of their interest in the art and science of metals. Unusual interest was shown at this meeting by all in attendance and enthusiasm for future meetings was expressed.

Speaker at this meeting was William F. Finkl of A. Finkl & Sons, Inc., Chicago, who discussed causes and remedies of die failures. Guests of the local men, including a large delegation from Indianapolis chapter, brought the total attendance above 200.

An inspection trip through the Muncie Products plant preceded a dinner which was followed by the technical talk and business session.

At this meeting W. E. Sanders, Muncie Products Division, was elected chairman; R. J. Peters, Warner Gear Co., vice-chairman; E. M. Kingsley, Muncie Products Division, secretary; and W. A. Full, Dean Forge Co., treasurer.

Members of the executive committee elected at this meeting were Sidney Summerlee, Chrysler Corp., Newcastle; A. W. Phelps, Delco Remy Corp., Anderson; R. S. Tinsley, Automotive Gear Works, Richmond; F. M. Crapo, Indiana Steel and Wire Co., Muncie; E. F. Davis, Warner Gear Co., Muncie; and F. E. Ball, Ball Bros., Muncie.

The first Wednesday of each month was selected as regular meeting night.

At a meeting of the executive committee held on Jan. 18, the following committees were appointed:

Membership: H. O. Bennett, chairman, Muncie Products Division; E. A. Kaegi, Delco Remy Corp.; Edw. Linker, Ball Bros.; R. S. Tinsley, Automotive Gear Works; W. W. Patrick, Ingersoll Steel & Disc Co.; J. W. Anderson, Chrysler Corp.; F. D. Brutchen, Warner Gear Co.

Program: Rodney Hayler, chairman, Central Indiana Gas Co.; E. A. Thomas, Chrysler Corp.; A. E. Grater, Muncie Products Division; L. Lawrence Ratchford, Warner Gear Co.; F. W. Cederleaf, Muncie Products Division.

Social: C. R. Bond, chairman, Muncie Products Division; E. E. Everett, Muncie Products Division; B. G. Appleton, Muncie Products Division; A. W. Holmes, Indiana Steel & Wire Co.; D. D. Burress, Ball Bros.

TOOL STEEL SUB-COMMITTEE STUDIES TREATMENT OF DIES

Holds Meeting on January 29

Tool steels, especially those steels used for dies, was the problem discussed and considered by the Sub-Committee on the Heat Treatment of Tool Steels of the A.S.S.T. at its meeting in Pittsburgh on Jan. 29, at the Keystone Athletic Club.

All members of the committee were present at this meeting with the exception of one. Those present were as follows: J. P. Gill, chairman, A. D. Beeken, Jr., H. T. Cousins, N. B. Hoffman, C. M. Johnson, W. H. Phillips, DuRay Smith, J. A. Succop, and J. E. Donnellan, secretary.

This meeting was devoted to preparing recommended practices for the heat treatment of dies to supersede the present practice on the Heat Treatment of Plain Carbon and Alloy Steel Die Blocks, now in National Metals Handbook.

This series of heat treating practices will consist of die blocks, cold heading dies, and silverware dies.

This Sub-Committee was the first organized by the Recommended Practice Committee. The Tool Steel Committee has performed a valuable piece of work for the Society and has contributed much to the value of National Metals Handbook.

A. S. S. T. DIRECTORS IN SESSION

A.S.S.T. officers and directors for 1932 at their recent meeting in Cleveland. Seated, left to right, are J. M. Watson, past president; W. H. Eisenman, secretary; W. B. Coleman, vice-president; A. H. d'Arcambal, president; C. F. Pascoe and H. D. McKinney, directors. Standing: B. F. Shepherd and F. B. Drake, directors; A. T. Clarage, treasurer. Photograph was taken in the library at the national offices.

DESCRIBES AIRCRAFT ENGINE AT DETROIT

Detroit's January Talk by J. B. Johnson Instructive

By O. W. McMullan

The January meeting of the Detroit chapter was held Jan. 11, in the Fort Shelby Hotel. The dinner was followed by the presentation of the movie film showing the allotropic changes in iron and several alloys on being heated to high temperatures.

The speaker for the evening was J. B. Johnson, chief of the material section, Wright Field, Dayton, Ohio. His topic was "Aircraft Metallurgy." Mr. Johnson showed slides and described the materials and heat treatments as might be used for a 600 H.P. engine. It would have a forged and machined barrel of S.A.E. 1045 or 1050 steel either normalized at 1550° or quenched and drawn at 1050°, to a hardness of 210-225 Brinell. This treatment is for machining only as there is no difference in wear or distortion. In liquid cooled engines the barrel may be made from chrome-molybdenum steel with a closed end and have a Brinell of 375.

Continued on Page Four

SPRING SUB-COMMITTEE MEETS TO GATHER "HANDBOOK" FACTS

Getting New Heat Treating Data

The heat treatment of springs—hot and cold formed, helical and flat, made from carbon and alloy steel—was the subject carefully considered by the Spring Committee of the A.S.S.T. at its meeting on Jan. 29, Keystone Athletic Club, Pittsburgh.

All the members were present at this meeting with the exception of one. Those present were as follows:—W. H. Phillips, chairman, Henry Chandler, DuRay Smith, A. K. Strandberg, and J. E. Donnellan, secretary.

This committee is preparing a series of heat treating practices for various type springs which, when completed, will probably be the best compilation of heat treating data available on springs.

This practice will include all general classes of springs, large, small, coil, and flat, designed for railway and miscellaneous applications. The committee is endeavoring to complete these reports within the near future and they will replace the present heat treating practice on springs which now appears in National Metals Handbook.

DETROIT MEN ENTERPRISING; CLEVERLY RECRUIT MEMBERS

Enterprise on the part of two members of the Detroit chapter has resulted in the securing of several new men for the local chapter.

One of the Detroit members is connected with the Cadillac Motor Car Co:, the other is affiliated with the Chrysler organization. Both were struck with the amazing amount of practical information contained every month in *Metal Progress* and, thinking that perhaps other members of their organizations would be interested, they routed their own personal copies of a recent issue to the engineering department.

Interest was immediately shown by many engineers in both companies who were not acquainted with the publications of the A.S.S.T. A few words of explanation of the Society's purposes and accomplishments, followed by a hint that membership in A.S.S.T. was a valuable instrument to personal progress resulted in a number of signatures to membership application blanks.

Such missionary work as this has been a great factor towards the growth in the size and services of the Society. Try routing *your* copy of *Metal Progress* through your plant and help your chapter develop.

DIRECTORS SET WEEK OF OCT. 3 AS DATE; IMMENSE ARENA WILL HOUSE ENTIRE SHOW

Board Approves Payment of Dues in Two Installments; Society's Surplus Fund Increased During 1931

The 1932 National Metal Congress and Exposition will be held in Buffalo, Oct. 3-7, the Board of Directors of the A. S. S. T. decided at their meeting in Cleveland, February 4 and 5. This is the first time that Buffalo has had the Congress and Exposition. The Exposition will be held in the 174th Regimental Armory in a huge arena, free from pillars and other obstructions, and large enough to hold all exhibits. Ample and convenient meeting rooms are also to be found in the Armory and afternoon sessions of the Congress will be held there. More detailed announcements will be made later.

HIGHLIGHTS OF DIRECTORS' MEETING

Chose Buffalo for the National Metal Congress and Exposition, Oct. 3-7, 1932.

Voted that dues of present members can be paid in two equal instalments, March 1 and Sept. 1, 1932.

Observed with pleasure the Society's financial record in 1931 when almost $11,000 was added to the surplus.

Accepted the suggestion of the employees of the National Organization that their salaries be reduced.

Adopted a budget for 1932.

Drafted a list of principles which should be incorporated in any proposed change of the Constitution.

McCANN-HARRISON CO. BOUGHT

Foundry Equipment Co., Cleveland, manufacturers of Coleman core and mold ovens and Swartwout industrial ovens, has purchased the business of McCann-Harrison Co., manufacturers of conveyor hearth and standard furnaces for annealing, normalizing, heating, etc. The business will be operated as the McCann-Harrison Division of Foundry Equipment Co., with main offices and plant located at 1831 Columbus Road, Cleveland.

W. L. PATTERSON DIES SUDDENLY

William L. Patterson, director of the technical bureau of the Bausch & Lomb Optical Co., Rochester, N. Y., died suddenly in the company's offices while at his work on Feb. 5. Mr. Patterson had been connected with Bausch & Lomb since December, 1894. He was a member of the A. S. S. T. and contributed an article to *Metal Progress*.

Floor plans for the Exposition are being made up and will be released to exhibitors immediately.

Another important action of the Board was the passing of a motion that dues of present members of the Society could be paid this year in two equal semi-annual instalments due March 1 and Sept. 1. The Board expressed much pleasure at the Society's successful financial record in 1931 when the sum of $10,977.50 was added to the surplus. The Directors also accepted the suggestion of the employees of the National Office that their salaries be reduced.

A budget for 1932 was prepared and is printed on page 2 in this issue.

The regular audited financial statement will be printed in a later issue.

A list of general principles which should be incorporated in any proposed change of the Constitution was adopted. After consideration of the constitutional changes submitted to the Board at the September, 1931, meeting by the National Constitution and By-Laws Committee and submitted by the Board to the executive committees of the chapters for their consideration and recommendation, it was unanimously agreed that there was not sufficient unanimity of opinion among the chapters as to the possibility that the proposed changes would have the desired effect. This led to the drafting of the list of principles involved in the constitutional changes.

All members of the Board were present at these meetings, which were held all day Feb. 4 until 1:30 on the morning of Feb. 5. The Feb. 5 meeting opened in the morning and was not concluded until the end of the day. The full minutes of this meeting will be found on page 2 of this issue.

"METAL PROGRESS" STUDIED BY PUBLISHER'S ASSOCIATION

From its first issue, *Metal Progress* has been acclaimed by printers and advertising men as a fine achievement in the magazine publishing field.

Unusual recognition among the publishers of business and trade magazines themselves was just recently bestowed on the publication. An association of publishers at a meeting in Chicago on Jan. 25 studied *Metal Progress* as an outstanding example of typography and design in the business paper field.

Wm. A. Kittredge, an executive of the Lakeside Press of R. R. Donnelly & Sons Co., internationally known firm of printers, engravers, and lithographers, had been chosen to address the meeting on the subject of typographic and design improvements in business magazines.

He had previously seen a number of issues of *Metal Progress* and, deciding that it exemplified his topic, wrote to the National Offices of the A.S.S.T. for full information.

E. E. Thum, editor, gratified by the request, prepared a detailed account of the history of *Metal Progress*, and explained the publication set-up of the Society.

Then, to illustrate Mr. Kittredge's talk, a number of panels showing typical pages from the advertising and editorial sections of the magazine were made up. These were closely examined by the audience.

After his talk Mr. Kittredge wrote Mr. Thum as follows: ". . . . I used the charts as well as most of the other data. Your magazine was applauded by the people present as one of the best examples of business journalism in America. I would like . . . . . to use some of your material as data in an article which I expect to write on this subject some time soon."

Letters were also received from several of those who heard Mr. Kittredge speak. The assistant editor of a powerful trade magazine wrote, "Mr. Kittredge referred to your magazine as the trade journal doing the most outstanding job in the matter of layout and typography, and showed us a number of your issues. We are very much interested in what you have done and would apreciate your sending us two or three back issues so that we can study them more leisurely."

The editor of another trade paper also wrote for additional information and asked permission to reprint the photograph of the steel balls on page 26 of the January number.

BOLT COMMITTEE OF A.S.S.T. HOLDS BIG MEETING JAN. 22

Study New "Handbook" Material

The Sub-Committee of the Recommended Practice Committee on the Methods of Testing and Inspecting Bolts, Screws, Nuts and the like held an all day meeting in the national offices of the A. S. S. T. on Jan. 22. The meeting was the first one the Committee has had to consider the problem of preparing a recommended practice on the methods of inspecting and testing these important items of construction.

Because of the diversity of methods used throughout the nut and bolt trade the Committee is destined to perform a valuable and worth while piece of work in promulgating the best methods for inspecting and testing bolts, screws and nuts.

The Committee has prepared a very complete and comprehensive working outline covering the entire subject, and there is no doubt but what the completed practice will add greatly to the value of the National Metals Handbook and be of real assistance to A. S. S. T. members connected with the bolt industries.

The attendance at the Committee meeting was excellent. Out of a committee membership of fourteen, twelve were present as follows:—T. S. Higbee, chairman, E. G. Brick, W. C. Cooke, C. L. Harvey, S. Hersch, R. C. Klemm, W. C. Masters, F. E. McCleary, H. B. Pulsifer, E. M. Slaughter, H. A. Towner (substituting for G. R. Long), and J. E. Donnellan, secretary.

THE REVIEW

Devoted to the interests of the American Society for Steel Treating

A Review of the Activities of the Chapters and National Organization of the A. S. S. T.

Published monthly except July and August by the AMERICAN SOCIETY *for* STEEL TREATING 7016 Euclid Ave., Cleveland, O.

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A. T. CLARAGE, *Treasurer*
J. M. WATSON, *Director*
B. F. SHEPHERD, *Director*

W. B. COLEMAN, *Vice-President*
W. H. EISENMAN, *Secretary*
F. B. DRAKE, *Director*
H. D. MCKINNEY, *Director*
C. F. PASCOE, *Director*

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RAY T. BAYLESS ..... *Editor*
JOHN G. MAPES ..... *Managing Editor*

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A. S. S. T. Budget For Current Year

INCOME		
Membership Dues	$ 57,500.00	
Sustaining Exhibit Memberships	3,500.00	
Metal Progress Advertising	72,000.00	
Metal Progress Subscriptions	1,630.00	
Metal Progress Sales	200.00	
The Review	510.00	
Bound Transactions Sales	1,500.00	
Reprints	3,000.00	
Books Purchased	500.00	
Books Published	3,000.00	
National Metals Handbook	1,000.00	
Transactions	915.00	
Pencils, Pins and Buttons	25.00	
Interest Earned	6,352.25	
Discount Earned	1,000.00	
Sundry Income	500.00	
Convention	45,000.00	
		$198,132.25
EXPENSE		
Apportionment of Dues to Chapters	$ 24,725.00	
Support of Chapters	1,000.00	
Metal Progress	69,060.95	
Transactions	14,341.70	
The Review	2,857.20	
Reprints	1,750.00	
Bound Transactions	500.00	
Books for Library	50.00	
Books Purchased for Resale	400.00	
Books Published	800.00	
National Metals Handbook	3,513.10	
H. M. Howe Medal Fund	125.00	
E. D. Campbell Memorial Lecture	500.00	
National Committees	3,743.35	
Directors	2,000.00	
President's Office	600.00	
Accounting Dept.	4,715.00	
Secretary's Office	14,683.95	
General Expense	12,571.70	
Reserves	5,195.30	
Convention	35,000.00	
		$198,132.25

METALLURGIST TO BE AWARDED FIRST ALFRED NOBLE PRIZE

Upon a physical metallurgist will be conferred next month the first Alfred Noble Memorial prize to be awarded. This prize, honoring the famous American civil engineer, is granted for the outstanding paper by an engineer under 30 year of age which appears in the *Transactions* of the A. I. M. E., the A. S. C. E., the A. S. M. E., the A. I. E. E., and the W. S. E.

The winner is Corbin T. Eddy, assistant professor of physical metallurgy at the Michigan College of Mining and Technology. His paper, "Arsenic Elimination in the Reverberatory Refining of Native Copper," was delivered at the February, 1931, annual meeting of the A. I. M. E.

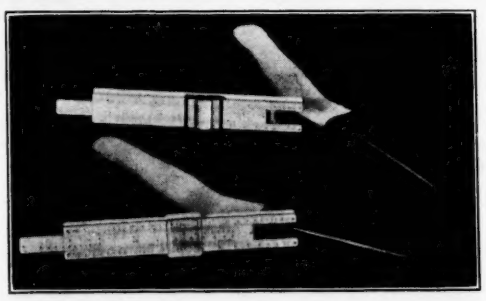
NEW WELD ELECTRODE ON MARKET

A new line of arc welding electrodes which have a heavy all-mineral flux coating has been placed on the market by Metal & Thermit Corp., acting as exclusive sales agents for the American Murex Corp., the manufacturers. Both companies have offices at 120 Broadway, New York. The new electrodes, known as Murex, are made 18 inches long and in types and sizes suitable for a wide range of welding operations.

P. & W. ANNOUNCE NEW TYPE GAGE

Pratt & Whitney Co., Hartford, have introduced a new adaptation of the Electrolimit gage in the form of a comparator for external gaging. The new instrument provides a fast and very accurate means for the inspection of production work. The new comparator is part of the standard P & W line of precision gages and gaging devices.

This Pocket Slide Rule *Really Works*



This rule answers a long felt need. Only 5½ inches overall, it just fits a vest pocket. Both standard and folded scales make it a really useful tool. Magnifier furnished at small added cost. Built of plied bamboo on an aluminum base, it will not warp or rust in normal use. Markings are engine ruled on an ivory finish.

The price is only $2.50 for the rule and a real leather case, 50c extra for the magnifier.

To: A.S.S.T., 7016 Euclid Avenue, Cleveland, Ohio.
Please send me _____ pocket slide rules for 10 days free examination.
_____ rules *without* magnifier, $2.50 @ _____ rules *with* magnifier, $3.00 @
☐ Cash enclosed ☐ Please render invoice and I will pay promptly.
Name_____
Street and No._____
City_____State_____

MINUTES, FEBRUARY DIRECTORS' MEETING

MEETING OF THE BOARD OF DIRECTORS
AMERICAN SOCIETY FOR STEEL TREATING
Cleveland, Ohio
Feb. 4, 1932—9:30 A. M.

Present: A. H. d'Arcambal
W. B. Coleman
A. T. Clarage
W. H. Eisenman
J. M. Watson
F. B. Drake
B. F. Shepherd
H. D. McKinney
C. F. Pascoe

Absent: None

The first order of business was the unanimous adoption of a resolution of organization proposed by Mr. Watson, seconded by Mr. Pascoe, and unanimously carried, which was as follows:

"In order to comply with the laws of the State of Ohio, under which the American Society for Steel Treating is incorporated and in which the directors elect their own officers, therefore be it resolved that the following are to constitute the officers of the American Society for Steel Treating for the year 1932:

"President —A. H. d'Arcambal
Vice-President—W. B. Coleman
Treasurer —A. T. Clarage
Secretary —W. H. Eisenman"

Upon motion properly made, seconded, and unanimously carried, the minutes of the meeting held in Boston, September 22, 1931 were approved.

President d'Arcambal then presented his appointments on national committees for confirmation of the board, although the appointments had previously been ratified by mail ballot.

Upon motion properly made, seconded, and unanimously carried, the committee appointments were approved as printed on page 4.

The directors then gave consideration to the report of the meeting of the National Finance Committee held at the Society headquarters on February 3, and the treasurer presented for their consideration the balance sheet of the Society as of December 31, 1931.

It was noted by the board of directors in the study of the liabilities and reserves and surplus that the outstanding indebtedness of the Society was only $839.25, of which over half was for the December payments of dues to the chapters and that the Society had set aside in reserve $45,200.00, had $735.57 in prepaid expenses and had in surplus $151,039.43, making the total assets of the Society $197,814.25.

The report showed that during the year 1931, $10,977.50 had been added to surplus.

The various items of the balance sheet were studied in order and in great detail and during the consideration of the cash assets of the Society the motion presented by the unanimous vote of the Finance Committee to the effect that the accounts of the Society be confined to the larger banks, such as the Cleveland Trust Co., the Union Trust Co., and the Bank of Montreal, and also that the committee approve the opening of an account in the Bank of Montreal for the deposit and collection of Canadian funds, was upon motion by Mr. Pascoe, seconded by Mr. Watson, unanimously carried.

The treasurer then presented a list of the investments of the A. S. S. T., together with the cost price, market value, and their Standard and Moody ratings, which was carefully studied.

While the bonds showed depreciation of approximately 25 per cent, nevertheless, the depreciation had been much less than the Dow Jones average depreciation for bonds, and the board felt well pleased with the condition of the investments.

Upon motion properly made, seconded, and unanimously carried, the recommendation of the Finance Committee was approved to the effect that, with its present information, no change in the investments as listed was recommended.

Upon consideration of accounts receivable, the treasurer reported that with the exception of one account, the accounts were on an average not in excess of 6 weeks old and in reality represented current billing.

Upon motion properly made, seconded, and unanimously carried, the recommendation of the Finance Committee to the effect that an additional reserve of $3,000.00 be established for possible losses in accounts receivable, was approved.

Upon motion properly made, seconded, and unanimously carried, a total of $725.89 in accounts receivable was written off.

Upon motion properly made, seconded, and unanimously carried, the inventory was accepted as presented.

Upon motion properly made, seconded, and unanimously carried, the depreciation on the office furniture and fixtures for the year 1931 was made at 10 per cent.

The Finance Committee then presented to the board of directors an income and expense statement for the 1931 Boston Convention which was accepted.

Upon motion properly made, seconded, and unanimously carried, the income and expense statement for the 1931 Western Metal and Machinery Exposition was accepted.

The board of directors then received from the treasurer the income and expense statement for the year ending December 31, 1931.

Upon motion properly made, seconded, and unanimously carried, it was accepted as presented.

The treasurer then presented the budget which had been prepared at the meeting of the Finance Committee on the previous day.

The board studied each item on the income and expense side of the budget.

However, due to the lateness of the hour it was decided to delay confirmation of the budget and make it the first order of business at the meeting on the following day.

Upon motion, properly made, seconded, and unanimously carried, the board of directors adjourned at 6:00 o'clock to reconvene again at the Hotel Cleveland at 8:30 p. m.

It was agreed by the board that the first order of business at this meeting would be the proposed changes in the constitution and by-laws of the Society. These had been submitted to the board at the September (1931) meeting by the National Constitution and By-laws Committee and then submitted by the board to the executive committees of the chapters with the request that they advise the board as to the result of their consideration of the proposed changes.

The secretary then presented the following report:

REPLIES FROM CHAPTERS ON THE PROPOSED CHANGES TO THE CONSTITUTION AND BY-LAWS

American Society for Steel Treating

Total number of chapers—37 (including the 2 groups)
Total replies received—25 (including 1 group)
Total not replying—12 (including 1 group)

The following ten chapters approved: Baltimore (group), Cleveland, Columbus, Detroit, Hartford, Indianapolis, Montreal, Ontario, Schenectady, Springfield.

The following six chapters approved with minor suggestions: Boston—approved, slight changes in wording; Buffalo—approved, slight changes in wording; Cincinnati—approved, with recommendations as to wording and grouping; Golden Gate—approved, with suggestion that the two western chapters be a group; Los Angeles—approved, with suggestion that the two western chapters be a group; Rochester—approved, including a recommendation that the board be not increased.

The following four chapters disapproved: Chicago—disapproved, making recommendations of general principles, the important item of which was that the nomination should be for directors only and the directors should elect their own officers; New Haven—approved change providing for increase of board of directors, but presented a counter-proposal whereby the officers of the Society would be elected by the directors; Pittsburgh — opposed; Rockford — opposed.

The following five chapters recommended delay: Dayton—made no decision, recommended delay; Lehigh Valley —recommended delay; New York—recommended delay; Philadelphia—recommended delay; Washington — recommended delay.

In accordance with Mr. Watson's letter of October 8 to the executive committees of the chapters, all chapters not heard from by December 15, 1931, were to be considered favorable to the changes.

The following twelve chapters did not reply: Canton-Massillon, Fort Wayne (group), Milwaukee, New Jersey, North West, Rhode Island, Southern Tier, St. Louis, Syracuse, Tri-City, Worcester, York.

The board gave the proposed changes that had been submitted to the chapters consideration and it was unanimously agreed among the members of the board that there was not sufficient unanimity of opinion among the chapters as to the possibility of the constitutional changes having the desired effect, and that it would be inadvisable to submit to the membership for final ratification the changes in the constitution as contained in the present proposal.

Therefore, the board of directors immediately devoted attention to the consideration of a number of other proposals and suggestions and decided to endeavor to agree upon a list of principles which should be incorporated in any proposed change of the constitution. After about six hours' consideration, during which time a list of general principles was tentatively established, a motion was made, passed, and unanimously carried that the secretary should have this list drawn up and presented to the board at the meeting the next day.

The meeting adjourned at 1:30 A. M., until the next day, Friday, February 5th, at 9:30 A. M.

All present.

The first order of business was the unfinished consideration of the budget. The secretary presented to the board of directors, on behalf of the employees of the national organization, their suggestion that all salaries over $4,000.00 be reduced 10 per cent and that all salaries over $2,000.00 be reduced 7½ per cent, and that all salaries over $1,000.00 be reduced 5 per cent, effective Feb. 1.

Upon motion by Mr. Shepherd, seconded by Mr. Clarage and unanimously carried, the suggestion of the employees of the national organization was accepted.

Upon motion properly made, seconded, and unanimously carried, the budget was approved. (Printed elsewhere in this issue.)

Upon motion properly made, seconded and unanimously carried, it was voted that during the coming year the Finance Committee and the Board of Directors should have submitted to them at 3-month intervals a reconciliation statement showing the income and expense items of the Society as against the 1932 income and expense budget.

Upon motion properly made, seconded, and unanimously carried, the report submitted by Secretary Bayless of the Publication Committee relative to the program for the National Metal Congress in 1932 was approved.

At 11:00 o'clock the Board of Directors received in audience a delegation from the Buffalo chapter and from the business industry of that city whose purpose was to invite the Board of Directors to select Buffalo as the location of the 1932 National Metal Congress and Exposition.

The Buffalo representatives were John H. Birdsong, Chairman Buffalo Chapter, William Buckley of the Buffalo Convention and Tourist Bureau, C. P. Yoder of the Niagara Hudson Power and Light Co., John Daniels of the Statler Hotel, K. E. Rogers of the Carborundum Co., B. L. McCarthy of the Wickwire-Spencer Co., and J. Robert Eves of the Falls Electric Furnace Co.

An invitation was also presented from the Convention and Tourist Bureau of Detroit through Lee Barrett.

The board of directors having already given very careful consideration and having heard the presentation of the merits of the two respective cities after due deliberation voted to select Buffalo as the location for the 1932 National Metal Congress and National Metal Exposition, and selected the week of October 3 as the time for these events.

Upon motion properly made, seconded, and unanimously carried, the report of the Recommended Practice Committee, as submitted by the committee including Mr. Archer's classification was unanimously approved.

Upon motion properly made, seconded, and unanimously carried, authority was granted to the petitioners for the organization of a group of the A. S. S. T. at Muncie.

Upon motion properly made, seconded, and unanimously carried, it was agreed that those individuals who are members of the Society at the present time should have the privilege of paying one-half of their dues on the due date and the other half 6 months later.

The Secretary then presented the report of the meeting of the board of directors pertaining to the changes in the Constitution as he had been instructed to do at the close of the meeting on February 4.

After this report had been given additional consideration, it was moved, seconded, and unanimously carried that this report be sent immediately to all of the members of the board of directors whose duty it would be to study the various proposals and principles here submitted and to notify the secretary by March 1, at the latest, of their additional suggestions and notations. Whereupon if the proposed changes and suggestions received the approval of a majority vote of the board, the secretary was then authorized to submit them to the chapter executive committee with the statement that it has the approval or majority approval of the board and request the chapters to study immediately the general provisions submitted and to advise the board of directors of their comments. It was further included in this motion that copies of the letters of the members of the board of directors forwarded to the secretary, giving either disapproval or approval and/or suggesting different phraseology and/or different proposals should be forwarded to each member of the board and that the director himself should indicate for the information of the other members of the board whether he considered the changes suggested to be minor or important.

The invitation from Toronto Convention and Tourist Bureau to hold the next meeting of the board of directors in that city was presented but upon motion properly made, seconded, and unanimously carried, it was decided that the next meeting of the board of directors should be held in Cleveland.

Upon motion properly made, seconded, and unanimously carried, the meeting adjourned, subject to the call of the president.

WASHINGTON LEARNS OF METAL COHESION

Dr. R. H. Canfield Presents Fine Talk in January

By Evan F. Wilson

The Washington chapter, for the first meeting of the New Year, had the pleasure of listening to Dr. R. H. Canfield, superintendent of the division of physical metallurgy, U. S. Naval Research Laboratory, Anacostia, D. C.

A very enjoyable dinner was held previous to the meeting with about twenty in attendance. The group then adjourned to the Auditorium of the New Interior Building where others joined the audience.

Chairman Dietrich opened the meeting by announcing that in previous years, some guest speaker, foreign to the U. S., was invited to address the chapter in connection with his attendance at the National technical meetings. This year the conditions were not favorable to such a procedure but the necessity for going outside the States did not exist. In fact, Washington was so fortunate as to supply a most capable lecturer within its own chapter. Chairman Dietrich then turned the meeting over to Dr. Rawdon of the Bureau of Standards to introduce the speaker and lead the technical discussion. Mr. Rawdon observed that it was customary to devote one meeting of the year to a discussion of rather fundamental or possibly theoretical matters and this year was particularly favored by Dr. Canfield whom he introduced without further description.

Dr. Canfield then presented the subject of "Cohesion in Metals," starting with the atomic structure as conceived by Bohr and picturing the general arrangement of subsequent structures formed, in accordance with our present understanding. From the atomic structure involving the proton and electron, he considered the molecule, the homopolar formation, attraction and repulsion between molecules as determined by their particular exponential functions and indicated that no fundamental difference existed between the chemical bonding and the physical attraction as expressed by electro-static influences.

It was emphasized that the crystal structure as commonly considered by metallurgists, does not possess the perfect schematic arrangement usually accepted. A disorganized condition of the surface exists and in particular the "block-structure" as promulgated by Zwicky was suggested to explain certain contingent characteristics.

The limitations of this more modern physical conception was discussed using a particular example of rock-salt.

An interested discussion ensued, particularly in reference to slip movement in metals and grain boundary conditions.

Chairman Dietrich in closing the meeting complimented Dr. Canfield on the lucid handling of an abstract and difficult subject. The appreciation of the audience was expressed by a rising vote of thanks and applause.

A forthcoming social meeting was announced in which an effort would be made to bring the members together with some very interesting entertainment being planned.

In respect to membership, G. L. Yetter, chairman of that committee, was arranging for a concerted drive over a two months' period. A member for each present member was the program.

NORTHWEST LIKES TALK BY C.E.PLUMMER ON "CORROSION"

Keen Discussion Ends Meeting

By A. C. Forsyth

The January meeting of the Northwest chapter was held at the Manufacturers Club, Minneapolis, on Jan. 28.

C. E. Plummer, technical director of chemical and metallurgical engineering of the Robert W. Hunt Co., Chicago, gave a very interesting and instructive talk on "Combating Corrosion." The topic was one of general interest and a large number of members and guests were present.

The speaker divided his lecture into three principal divisions which are as follows: First, he discussed the different methods for making accelerated corrosion tests and included partial and total submersion, alternate wet and dry, salt spray, the ferroxyl test, etc.

Second, he discussed protective coatings of different kinds, including all the metal coatings in commercial use, chemical coatings, such as paints and combinations of these two types. Mr. Plummer concluded his talk with a summary of the different kinds of corrosion resistant alloys and discussed, in considerable detail, their classification.

YORK'S FIRST 1932 MEETING FEATURES MACHINE FORGINGS

J. H. Friedman Interests Crowd

By Arthur W. F. Green

York chapter opened 1932 with its regular monthly meeting held in the rooms of the Engineering Society of York on Jan. 13, and listened to a most instructive talk by J. H. Friedman, vice president of the National Machinery Co. of Tiffin, Ohio.

Mr. Friedman's talk was entitled "Machine Forgings" and was illustrated with brand new motion pictures which had never before been publicly shown, illustrating the several types of forging machines made by his company as well as their construction and operation. A number of examples of typical forgings produced by some of these machines were also displayed.

Mr. Friedman was accompanied by William H. Rockenfield of his company, who aided considerably in making the meeting a success by his able operation of the motion picture equipment.

The meeting itself was called to order by Chairman George O'Neil and was attended by approximately 50 members, guests and friends. Mr. Friedman's talk and illustrations was followed by a very lively and pointed discussion. Considerable courtesy was extended to the group by Mr. Friedman in the genuine open manner with which he entered the discussion and he left behind him a most pleased and appreciative group.

Mr. Green also reported on the educational work of the chapter and asked that thought be given to the work, not as being carried on this year but as to what may be done in the future and asked the sincere cooperation of the educational committee that they consider means for suitably advertising this work.

DEVELOP NEW NITRIDING STEEL

A new steel containing chromium and vanadium has been introduced for nitriding purposes. Developed by Union Carbide and Carbon Research Laboratories, Inc., this steel has many of the physical properties found in S. A. E. 6100 steels. Chrome-vanadium nitriding steel contains from 0.50 to 2.50% Cr., 0.30 to 2% V and from a very low percentage up to 0.70% Carbon, depending on the physical characteristics desired. It can be manufactured according to well-established plant technique.

NEW HAVEN MEMBERS DISCUSS HARDENING

Jordan Korp is Main Speaker at Meeting on Jan. 21

By M. W. Brewster

The New Haven chapter was fortunate in having as its speaker on Jan. 21 Jordan Korp of the Leeds & Northrup Co. Under the subject of "Procedure of Correct Hardening", Mr. Korp interestingly reviewed the fundamentals of the proper hardening, quenching and drawing for dies and other intricate parts.

By keeping before his audience the results expected from some specific completed part, Mr. Korp segregated the variables in each operation and demonstrated the importance of controlling these variables. The speaker showed how careful observance of fundamentals gave the desired results and how lack of observance, due either to ignorance in the hardening room, or incompetent interference from elsewhere in an organization, was a costly folly. From a wide experience in hardening rooms in this country and abroad, Mr. Korp always aptly and often humorously emphasized each important point with a specific incident. The consensus of opinion was that it was a most practical, interesting and profitable talk.

At the dinner preceding the technical meeting, the coffee speaker was the civic-minded vice-president and general manager of the New Haven Gas Light Co., H. R. Sterrett, who discussed unemployment. He began with a brief statement of present national conditions and proceeded with a summary of the essentials of the various phases for both immediate relief and permanent stabilization of conditions in the future. The speaker outlined the work being done in New Haven and several other illustrative communities.

The chapter chairman, F. J. Dawless, reported that he had received a number of very favorable comments in letters from various executives, who were present at the chapter's "Executives' Night" meeting in December. It is felt by the chapter that this meeting did much to call attention to company executives in this part of Connecticut to the purposes and valuable work of the Society.

STUDY STEELS FOR HIGH TEMPERATURE

Hartford Hears V. T. Malcolm at Fine December Meeting

By James Allison

The Hartford chapter held a dinner at the City Club Dec. 8th, in honor of Vincent T. Malcolm, metallurgical engineer for the Chapman Valve Co., Indian Orchard, Mass., who later addressed 70 members and guests on the "Development of Alloy Steels for High Temperature, High Pressure Service."

Edmund S. Gardner, president of the Hartford Electric Steel Co., as technical chairman, introduced the speaker.

Mr. Malcolm first briefly sketched the history of the development of alloy steels for high temperature service. He said that an ideal alloy for this purpose would require complete resistance to abrasion, corrosion, and oxidation. Minimum requirements include the ability to carry loads continuously without appreciable distortion. Short time tests at temperatures over 700 degrees Fahr., are not a true test of this ability as they measure, principally, elastic deformation and not plastic yield which is a large factor at the higher temperatures. For parts which require close tolerance and which are not easily replaced, tightening leads to fatigue fracture and it becomes necessary to develope parts which will be good for the life of the equipment. Creep strength, expressed in terms of the load which can be carried at a definite temperature without distorting over 1% in 10,000 or 100,000 hours, is the measure used to determine the ability of the alloy to withstand high temperature service. Thermal expansion, thermal conductivity, oxidation, and erosion must also be known.

Mr. Malcolm described a steel of typical analysis: Carbon .15/.25, manganese .55, silicon .50, sulphur and phosphorus .05 max., chromium 4.5/6.5, tungsten .75/1.00 which will give a tensile strength of 120,000 lbs./sq. in., yield point 100,000 lbs./sq. in., elongation in 2" 20%, reduction in area 55%. Quenched from 1400 degrees F., it will show 386 Brinell and quenched from 1600 degrees F., 428 Brinell. At 270 Brinell it machines as readily as a nickel chrome steel does at 200 Brinell.

It resists corrosion by West Texas crude and is the same in this respect as stainless steel. In scale resistance, as in strength, it shows an advantage of about 400 degrees F., over carbon steel. A carbon steel at 1000 degrees F., showed creep strength of 1% in 10,000 hours under 800 lbs. per sq. in. loading against a value of 80,000 lbs. per sq. in. for the chrome tungsten steel. A cast chrome tungsten steel shows 10% better creep strength than in the rolled or forged condition. This alloy can be used at temperatures up to 1400 degrees F. It shows slight intercrystalline brittleness at 1600 degrees F.

Discussion brought out the information that the carbon is kept low to increase corrosion resistance, prevent tenderness, and to facilitate removal of risers. S.A.E. 3130 is suitable for high temperature bolts up to 900 degrees F. Chrome tungsten steel finds economical use at temperatures over 800 degrees F. The Germans have tried adding 7% tungsten or 0.7% titanium to 18-8 stainels to prevent intercrystalline brittleness. Failure of 18-8 stainless is probably due to incomplete austenitic structure and incomplete diffusion of carbides. At 280 to 320 Brinell chrome tungsten forgings or bar stock thread satisfactorily. This steel nitrides exceptionally well. A 20% nickel, 8% chrome steel used for high temperature service has a very high coefficient of expansion. Monel metal, used for valve seat rings at 800 degrees F., dropped out due to the different coefficient of expansion from the valve material.

SCHENECTADY HEARS TOUR

Good Talk Covers Furnace Atmospheres and Effect of Temperature

Sam Tour, vice-president of Lucius Pitkin, Inc., gave a very interesting and instructive talk on furnace atmospheres and the effect of temperature upon their equilibria at Schenectady chapter's Jan. 19 meeting. The resulting structures obtained on high speed steel under these various conditions were illustrated by lantern slides.

He showed the importance of furnace atmosphere on grain growth at a particular temperature and stressed the importance of keeping the temperature of high speed steel below 2380° F., the eutectic temperature of the iron, tungsten, carbon system, instead of going to 2400° F. as advocated by many steel manufacturers.

ALAN F. HILTON DIED JAN. 23

The New Haven chapter lost an active member by the death on Jan. 23 of Alan F. Hilton, metallurgist of the Farrel-Birmingham Co., Ansonia, Conn. Mr. Hilton was a member of the chapter's program committee.

SOUTHERN TIER FURNACE TALK DISCUSSES GAS ATMOSPHERES

A. H. Vaughan at Jan. 18 Meeting

By W. S. Bennett

The regular meeting of the Southern Tier chapter was held at Waverly, N. Y., on Jan. 18. The speaker of the evening was A. H. Vaughan of the Electric Furnace Co., Salem, Ohio, who spoke on furnaces.

The speaker, for the most part, dwelt on the mechanical handling apparatus of both electric and gas fired furnaces and illustrated the various types with lantern slides. Among the pictures shown was one of an electric furnace used for the heat treatment of aluminum structural shapes which was over 90 feet in length.

Considerable discussion followed Mr. Vaughan's talk on the relative merits of various gas atmospheres in heat treating furnaces. There was also considerable interest shown in the advantages and difficulties encountered in the use of counter flow carburizing furnaces, it being brought out in the discussion that slow cooling of carburized parts in boxes would not result in decarburization if the boxes could be vented for the circulation of air during the cooling process.

The next meeting of the chapter will also be held at the Jenkins Inn at Waverly, Feb. 15th. The subject at that time will be "Molybdenum."

BALTIMORE HEARS ALLOY STEEL TALK

Dr. Louis Jordan Recounts Their History and Status

By S. Proctor Rodgers

The January meeting of the Baltimore group was held at the Engineers' Club and was preceded by a dinner. The speaker this month was Dr. Louis Jordan, senior metallurgist at the U. S. Bureau of Standards. He delivered a simple non-technical talk on alloy steels, illustrated by lantern slides.

Dr. Jordan pointed out that alloy steels were the second step from wrought iron; the first step having been carbon steels. The development of alloy steels was first pushed by armor plate and projectile manufacturers who vied with each other to produce a plate which could not be pierced and a projectile which nothing could stop. To the automotive industry, however, is due a large share of the credit for having demanded and thus caused the development of the present wide variety of alloy steels for every purpose. He pointed out that the advantage of alloy steels over carbon steel was their adaptability to heat treatment. Because of this adaptability, the resulting strengths are greatly superior.

Dr. Jordan then considered the various elements used for alloying and their effects when used. Special alloy steels were then discussed. These are steels containing much larger percentages of the alloy for the purpose of giving them special properties such as corrosion resistance, electrical characteristics and strength at high temperatures. There is great need for a clarification of the nomenclature of these special steels, as has been done in the case of the automotive alloy steels.

An attendance of seventy at this meeting indicated both an interest in the subject and a healthy growth of the Baltimore group. At the next meeting, on February 29, 1932, the subject will be an illustrated movie talk on the "Manufacture of Brass and Copper."

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PITTSBURG HEARS T.D. YENSEN IN JAN.

Alloys of High Permeability Topic of Interesting Talk

By George P. Hallewell

Dr. T. D. Yensen of the research laboratories of the Westinghouse Electric & Mfg. Co. gave an interesting talk on Hypernik and other related high permeability alloys at the January meeting of the Pittsburgh chapter.

Dr. Yensen has spent many years studying magnetic alloys and methods of improving their magnetic properties. He pointed out that whereas formerly the 4% silicon-iron alloys were the only good ones available having relatively small hysteresis losses, today alloys of the iron-nickel series are available having much smaller losses with iron (99.99% pure) heading the list.

Hypernik and Permalloy, two alloys of this series, are now commercial products and used extensively in the telephone and sound reproducing industry. The low hysteresis losses of these alloys permit notes of long wave length to be easily reproduced which are not audible by the use of transformers made with iron-silicon alloys.

A phonographic demonstration and the ability of these nickel-iron alloys and exceptionally pure iron to be magnetized in the earth's magnetic field served to show the excellent magnetic properties of these alloys. Whereas 4% silicon-steel has an average hysteresis loss of 800 to 900 ergs, these newer alloys have losses of the order of 100 to 150. Such properties have been obtained by the removal of all oxides as a result of a high temperature anneal (1200° C.) in pure dry hydrogen.

B. & L. OFFER NEW "MIKE"

Bausch & Lomb Optical Co. announces a new wide field microscope, the BKT. Its substage mirror greatly broadens the range of its application. Because of a glass stage either opaque or transparent specimens can be observed. The microscope, removed from the base, can be placed on objects too large for the stage. This adapts it for studying large specimens. Five pairs of interchangeable objectives provide stereoscopic vision at magnifications from 0.7X to 87X.

M'QUAID TALKS AT LANSING

The Lansing group of the Detroit chapter held a meeting at Michigan State College on Jan. 9. A very excellent turnout of 105 was registered at the dinner and more than 150 were at the technical meeting. The talk was given by H. W. McQuaid, chief metallurgist, Timken-Detroit Axle Co., and chairman of the Detroit chapter. His talk was on gear steels with special reference to grain size, normality, treatment for machining, means of making hardness tests, and lubricants for gears.

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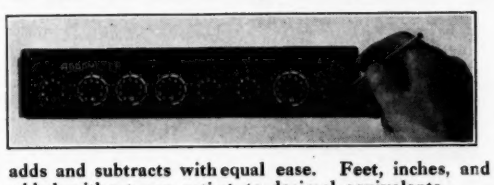

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D'ARCAMBAL TALKS TO CHICAGO CROWD

Tool Steel Chosen as Topic By 1932 A.S.S.T. President

By Harry Hardwicke

The announcement that National President A. H. d'Arcambal is to address the Chicago chapter has always meant a big turnout and an interesting meeting. There was no exception on Jan. 14.

The guest roll included several of the present and past officers of the National Society.

In the coffee talk period Clare Musser was introduced and played several selections on the Vibra Harp with piano accompaniment. The music was delightful and well received.

Chairman Colwell then called on several of our honored guests for short talks and the following responded: T. E. Barker, founder member; R. G. Guthrie, past president; A. T. Clarage, national treasurer.

W. H. Eisenman, national secretary, was slated to tell us what the New Year has in store for A.S.S.T. When Bill gets to Chicago it is like coming back home, so he has to reminisce a bit and tell a few of his best stories to illustrate. He is no pessimist, and we judge from his remarks that 1932 will be another good year for the Society.

J. M. (Mike) Watson, president of the A.S.S.T. in 1931, was introduced as technical chairman. He then introduced A. H. d'Arcambal, consulting metallurgist, Pratt & Whitney Co., Hartford, who spoke on "Carbon, Alloy and High Speed Tool Steels." His talk was illustrated with lantern slides.

The principal part of his talk had to do with high speed steel. A very interesting part of his talk dealt with the use of cemented carbide tool materials, such as tungsten carbide and tantalum carbide. Important developments in chromium plating of gauges, as well as tools, were brought out. The use of chromium plating on reamers showed considerable advantage. Throughout his talk Mr. d'Arcambal referred to sample tools which he brought along to further illustrate his remarks, and then he passed them around to the audience for inspection.

DESCRIBES AIRCRAFT ENGINES

Continued from Page One

The cylinder heads through which the motors are cooled are aluminum alloys since they have three times the heat conductivity of cast iron. One alloy used contains 10% copper and 1.25% iron and the Y alloy contains 4% copper, 1½% magnesium, and 2½% nickel, the latter being preferred for heads and pistons. This will have a Brinell of about 95 but softens in use to 50-60. Other alloys containing silicon are used and the forged pistons are better than the cast. Ribs also are preferable. Cases, housings and other parts of the engine are light alloys, some containing 8% copper and others with 4% copper and 1% silicon or a forged alloy similar to 25S. Magnesium alloys with 5-8% aluminum are used where good fillets are permissible. From 40 to 50% of the engines are light alloys.

The crank shaft is hollow and made from modified S.A.E. 3140 with higher nickel and chrome and sometimes with the addition of molybdenum. With a Brinell of 250-300 this gives a strength of 135,000 pounds per square inch, 15% minimum elongation and impact of 35-45 foot pounds, but the latter is now held to 48 minimum. Connecting rods are of the same material. They are mostly compression members and are heat treated to get a high yield point of 145,000 pounds per square inch and 10% elongation. Wrist pins and gears are made either of oil hardening steels or carburized, the latter preferred. S.A.E. 3312 and 2512 cooled in the box and given a single quench and low draw are the steels used.

Valves take the most punishment and limit the horsepower per cylinder. The 18% tungsten steel and 13% chrome steels are satisfactory up to 90% full speed. The latter is salt cooled in hollow stems. Valves may operate up to 1600° F. The steel mostly used now contains about 1% carbon, 3% cobalt, 13% chrome and a little molybdenum. This steel is good up to 1000° F. but softens above this. Valve seats are aluminum bronze containing some nickel and iron, sand cast and treated to 250 Brinell. Valve guides are aluminum bronze with 9½% aluminum and perhaps 1-3% iron, extruded and used at 160 Brinell.

Cams are made of case hardened S.A.E. 3115 or 2512. Springs are mostly .89-.94% carbon ⅛ inch music wire of about 270,000 pounds per square inch strength. S.A.E. 6150 also has been used and treated after forming. The best bearing material has been found to be a 30% lead-70% copper mixture with no tin and cast on a 0.20% carbon steel shell.

INDIANAPOLIS MEMBERS GO TO MUNCIE TO MEET ON JAN. 14

W. F. Finkl Talks to Big Crowd

By A. E. Focke

More than 250 members and guests met at Muncie on Jan. 14 for the Jan. meeting of the Indianapolis chapter.

The visitors were shown through the Muncie Products Division of the General Motors Corp. Groups were led through the various departments including the experimental department, laboratory, forge shop, gear cutting, heat treating, grinding, diamond boring, gear lapping, matching, assembly and testing.

The dinner was served in the factory cafeteria and the guest speaker was William F. Finkl of Chicago, who talked on the "Causes and Remedies for Die Failures."

This meeting was a preliminary organization meeting for the formation of a Muncie chapter, and the interest and enthusiasm shown by those attending the meeting should forecast an interesting future for this group.

ONTARIO'S RECORD MEETING ON JAN. 8

Survey of Arc Welding Draws Crowd of More Than 200

By J. W. McBean

The Ontario chapter probably had the largest attendance in its history, over 200, on January 8, 1932, at the Royal Connaught Hotel in Hamilton.

The coffee talk was given by Colonel, The Hon. Henry Cockshutt, who recounted his experiences in Central Africa. This talk was certainly a revelation to most of us and was not only instructive but entertaining as well.

The speaker of the evening was Samuel Martin, Jr. of the General Electric Co., who took "Arc Welding in Industry" as his topic.

The uses of the metal arc, the carbon arc, the Atomic hydrogen arc, and arcs with heavily coated metal rods were all taken up and special attention was given to the latter two because of the exceptional results which may be obtained with them in many cases.

These two types of arcs enable us to get a great increase in bending tests and in elongation, and the atomic hydrogen method in particular was shown by many examples to overcome a great number of difficulties as well as producing smoother work.

In the atomic hydrogen arc tungsten electrodes are used and the hydrogen is converged to the arc by a tube. Owing to the high temperature (about 4,000 deg. F.) the hydrogen molecule H_2 is broken up to atomic hydrogen, H plus H at the weld, and this acts as a powerful reducing agent.

In the case of aluminum welding, the hydrogen is assisted by a flux as the aluminum oxide is very hard to get rid of, but with the combination excellent welds are produced.

The atomic hydrogen is successful in producing tight welds in cases where the requirements are hard to meet.

In the extensive discussion which followed a built-up gear brought by one of the members served as an example of one method of providing against internal stresses in the metal. The gap in the rim was not welded till the joint between the web and rim was welded from the opposite side right around to the gap from both sides.

CINCINNATI MEMBERS STUDY PROBLEMS OF DEEP DRAWING

January Meeting Features Winlock

By N. C. Strohmenger

The fourth regular meeting of Cincinnati's season was held Jan. 7 at the Hotel Gibson and called to order about 8:00 P. M. by Chairman N. M. Salkover. Joseph Winlock of the Edward G. Budd Manufacturing Co., Philadelphia, spoke on the subject of "Stamping, Drawing, and Forming."

Mr. Winlock told us of the chemical analyses and physical properties of steel desirable to give the best results when doing deep drawing. He explained the limits and the effects of design for drawing and forming. A number of slides were shown which gave a better idea of how the grain arrangement and their sizes are responsible for some of the troubles you have. The proper grain sizes were illustrated that can be obtained by heat treating being done for the different operations of drawing and forming.

A motion picture displayed the modern machines in operation of stamping, drawing, forming, and assembling all steel automobile bodies. This movie showed the advantages of low center gravity of steel bodies.

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GAS CARBURIZING

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HEAT TREATMENT OF CARBON STEEL GEARS

H. J. Stein, Chairman, Allis-Chalmers Mfg. Co., Milwaukee; M. L. Frey, H. B. Knowlton.

HEAT TREATMENT OF SPRINGS

W. H. Phillips, Chairman, Molybdenum Corp. of America, Pittsburgh; Henry Chandler, H. W. Faus, DuRay Smith, A. K. Strandberg.

HEAT RESISTING ALLOYS

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HEAT TREATMENT OF TOOL STEELS

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JOINT COMMITTEE WITH A.S.S.T., A.S.T.M., and S.A.E. ON HEAT TREATMENT DEFINITIONS

A.S.S.T. Representatives: J. Fletcher Harper, W. J. Merten, Bradley Stoughton.

MECHANICAL HOT WORKING OF STEEL

S. C. Spalding, Chairman, American Brass Co., Waterbury, Conn; J. P. Fleming, A. O. Schaefer, W. R. Shimer.

MELTING OF STEEL

G. V. Luerssen, Chairman, Carpenter Steel Co., Reading, Pa.; George Batty, G. A. Dornin, J. P. Gill, Dr. C. H. Herty, Jr., O. K. Parmiter, Dr. G. B. Waterhouse.

NITRIDING

Dr. V. O. Homerberg, Chairman, Massachusetts Institute of Technology, Cambridge, Mass.; H. M. German, V. T. Malcolm, H. W. McQuaid, P. C. Osterman, R. Sergeson, W. L. Snyder.

NONFERROUS DATA SHEET COMMITTEE Institute of Metals Division of A. I. M. E.

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PICKLING OF STEEL

L. D. Granger, Chairman, Wickwire Spencer Steel Co., New York City; E. S. Taylerson, J. C. Weaver.

PLASTIC DEFORMATION IN PURE IRON

Dr. C. H. Mathewson, Chairman, Yale University, New Haven; Dr. Anson Hayes, R. L. Kenyon, Dr. R. F. Mehl, S. C. Spalding.

QUENCHING

W. S. Bidle, Chairman, W. S. Bidle Co., Cleveland; J. R. Adams, T. E. Hamill, C. G. Heilman, W. E. Jominy.

TESTING AND INSPECTING OF BOLTS SCREWS AND NUTS

T. S. Higbee, Chairman, American Chain Co., Detroit; E. G. Brick, W. C. Cooke, L. E. Guscott, C. L. Harvey, S. Hersch, F. E. McCleary, G. R. Long, R. C. Klemm, H. B. Pulsifer, J. M. Secor, E. M. Slaughter.

A.F.A. NOMINEES ANNOUNCED

T. S. Hammond, president of Whiting Corp., Harvey, Ill., has been nominated for the presidency of the American Foundrymen's Association. Frank J. Lanahan, president of Fort Pitt Malleable Iron Co., Pittsburgh, has been nominated vice-president.

To serve three year terms as directors, were named E. H. Ballard, General Electric Co., West Lynn, Mass.; H. Bornstein, Deere & Co., Moline, Ill.; S. B. Cuthbert, Carnegie Steel Co., Braddock, Pa.; David Evans, Chicago Steel Foundry, Chicago; Franklin G. Smith, Osborn Mfg. Co., Cleveland.

POSITION WANTED

Metallurgical Sales Engineer, Executive Training

Thirty-seven, college graduate, three years' metallurgical and practical steel mill work. Ten years' experience selling carbon, alloy, steels and allied lines to steel mill and drop forging industries, two years in executive capacity, having entire charge of sales and service. Experience includes technical lines and acids, their sale and usage in these industries. Extensive acquaintance with main office and mill executives throughout Middle West, the East, and Canada. Address 2-40, % The Review, 7016 Euclid Ave., Cleveland.

HARTFORD STUDIES PICKLING PROBLEMS

O.L. Thomas Describes Process and Equipment Used Today

By James Allison

The Hartford chapter had the pleasure at its January meeting of hearing O. L. Thomas, technical director of the Grasselli Chemical Co., Grasselli, N. J., give a brief description of modern pickling rooms and an explanation of the chemical actions of the acids and inhibitors. Mr. Thomas left plenty of time for discussion and gave many valuable pointers in reply to questions.

The acids commonly used are; sulphuric for its cheapness and ease of handling; muriatic for its faster pickling and reduced pitting action; hydrofluoric to remove sand; and nitric for alloy steels and non-ferrous metals and alloys, and for the passivation of chrome steels.

One part hydrofluoric acid, one part 20° Be muriatic acid, and six parts water are used in cypress tank at 125° to 133° F., for cleaning castings. The muriatic removes the rust and scale and saves hydrofluoric acid. Pickling time is about 45 minutes to one hour.

Sulphuric baths from 3% to 12%, at temperatures from 120° to 180° F., and pickling time of 30 to 45 minutes are used for general scale removal. Tendency today is to use larger equipment which permits use of low acid strength, low temperature, and longer pickling time, thus insuring uniform pickling with less danger of burning, pitting, and wasting of metal. Where ideal conditions of capacity are present 4% to 6% acid at 150° F. and 30 minutes time give the best results. Acid and iron content may and should be carefully controlled. When operating with a 6% acid solution the iron content is allowed to grow to about 5%. Standard capsules or tablets are available for checking acid and iron content.

Muriatic acid of 15% solution is generally used in pitch treated wooden tanks at 100° to 130° F. for pickling time of 30 minutes.

Only within the last five or six years have efficient inhibitors been developed. These are organic compounds and usually have a nitrogen base. They are colloidally dispersed compounds carrying electric charges which form some sort of film over the bare cathodic metal and prevent attack of the acid on the metal, but do not effect the attack on scale.

Some inhibitors now on market reduce the action of acid on bare metal to less than 1% of that obtained when no inhibitor is used. Tests of efficient inhibitors showed 91.48% inhibition with 0.01% of inhibitor (but decreasing rapidly with time) and 99.1% inhibition with 0.025% inhibitor.

During the discussion the point was brought out that of the grease removers, metasilicate of soda was probably the most efficient due to the fact that it gave an emulsion of oil particles surrounded by water films and prevented the formation of an oil scum at the top of the bath to contaminate the work.

PHILADELPHIA MEN HEAR DEAN FERNALD

"Engineers In Industry" is Topic at Jan. 8 Meeting

By Adolph O. Schaefer

The New Year got off to a rousing start with the Philadelphia chapter at its first meeting held Jan. 8. Deprived of a technical meeting in December by the holidays and the Smoker, the members' inherent love of discussion burst its bonds and almost made the speaker telephone his wife that he'd be home slightly later than he expected.

The program was a novel one. The dinner speaker was Harvey Harman, head coach of football at the University of Pennsylvania. Mr. Harman is fortunate in possessing a large and beaming personality. It took him a very few words to make the whole group cheer up and join in the laughter at the speaker's large supply of jokes.

The program committee had procured as the speaker, Dr. R. H. Fernald, Dean of the Towne Scientific School of the University of Pennsylvania. Dr. Fernald spoke on "Engineers in Industry."

The talk was, in effect, a history of the engineering profession leading up to an exposition of the place of the engineer in the civilization of the world today. Dr. Fernald has an unusual supply of facts and figures. All of the important engineering projects of the ancient world were described. The time and labor necessary to accomplish these projects was stated.

The last hundred years are, in this case, the hardest; and it was to these years that most attention was given. The changes in our mode of living during these years have been innumerable, and our outlook on the world has changed accordingly. It has been an age in which science and engineering hand in hand have altered our entire civilization. The future is hard to predict, and Dr. Fernald did not attempt it, although many questions were designed to force him to hazard a guess at it. The long discussion following the talk considered the depression from all angles, and finally veered to the problem of engineering education. It was while this latter subject was on the floor that the gong was sounded and the meeting adjourned. Those more involved in the discussion then buttonholed Dr. Fernald in a corner and there is no record as to when it ended.

DR. H. P. EVANS NOW IN AKRON

Dr. Harry P. Evans, chief metallurgist for Hubbard Steel Foundry Co., East Chicago, Ind., and formerly chief metallurgist for Pettibone Mulliken Co., Chicago, has been appointed chief metallurgist for Firestone Steel Products Co., Akron, Ohio.

HELP WANTED

Practical steel melter for converter. Must be able to make own charges and operate converter. State if any experience on electric furnaces and what other foundry experience. Tell salary expected and whether willing to move to Canada. Address 2-45, c/o The Review, 7016 Euclid Avenue, Cleveland, Ohio.

SALES REPRESENTATIVES

Wanted by conservative firm manufacturing full line of carburizing and metallurgical materials. Only men who have wide acquaintance and following considered. Commissions only. Please state territory covered and record. Address 2-10.

Employment Service Bureau

Address answers care of AMERICAN SOCIETY FOR STEEL TREATING, 7016 Euclid Avenue., Cleveland, unless otherwise stated.

POSITIONS WANTED

METALLURGIST: College graduate with ten years experience in research and development work. Thoroughly familiar with practically all types of physical testing, and handling of materials in all stages from simple inspection to the investigation of failures. Experienced with tool steels, stainless steels, nitriding, etc. Will accept position as assistant metallurgist or metallurgist at reasonable salary. Details on request. Address 1-25.

GRADUATE of Case School with chemical experience anxious to locate as junior chemist or metallurgist. Excellent references. Address 2-5.

CHEMIST METALLURGIST: Extensive experience in chemical analysis, physical testing, metallography, heat-treating, pyrometry, electroplating and plant operation. My past associations have been with both the ferrous and non-ferrous industries as metallurgist, chemist and research chemist. Address 2-15.

WELDING SUPERVISOR: Capable of handling both production and repair work, having had experience in all types of industrial welding, both along experimental and service lines, also instructor of welding in plant schools. Excellent references. Address 2-20.

CHEMIST-METALLURGIST: 27, single. 5 years experience in manufacturing plant and laboratory. Thorough knowledge of heat treating and maintenance of instruments. Can act as foreman or assistant. Have operated and been in charge of laboratory. Experienced in solving complaints and shop problems. Address 2-25.

METALLURGIST: thoroughly experienced in laboratory research work (8 years with nationally known corporations); 2 years superintendent alloy steel foundry; 2 years in charge of alloy division of large eastern foundry; 1 year experience in heat treating and melting of carbon steel. Address 2-30.

TOOL MAKER AND HEAT TREATER with 12 years as general foreman of tool making and heat treating; 2 years experience in nitriding development work; considerable experience in design and building of oil fired heat treating furnaces; 30 years service with a leading valve manufacturer. Address 2-35.